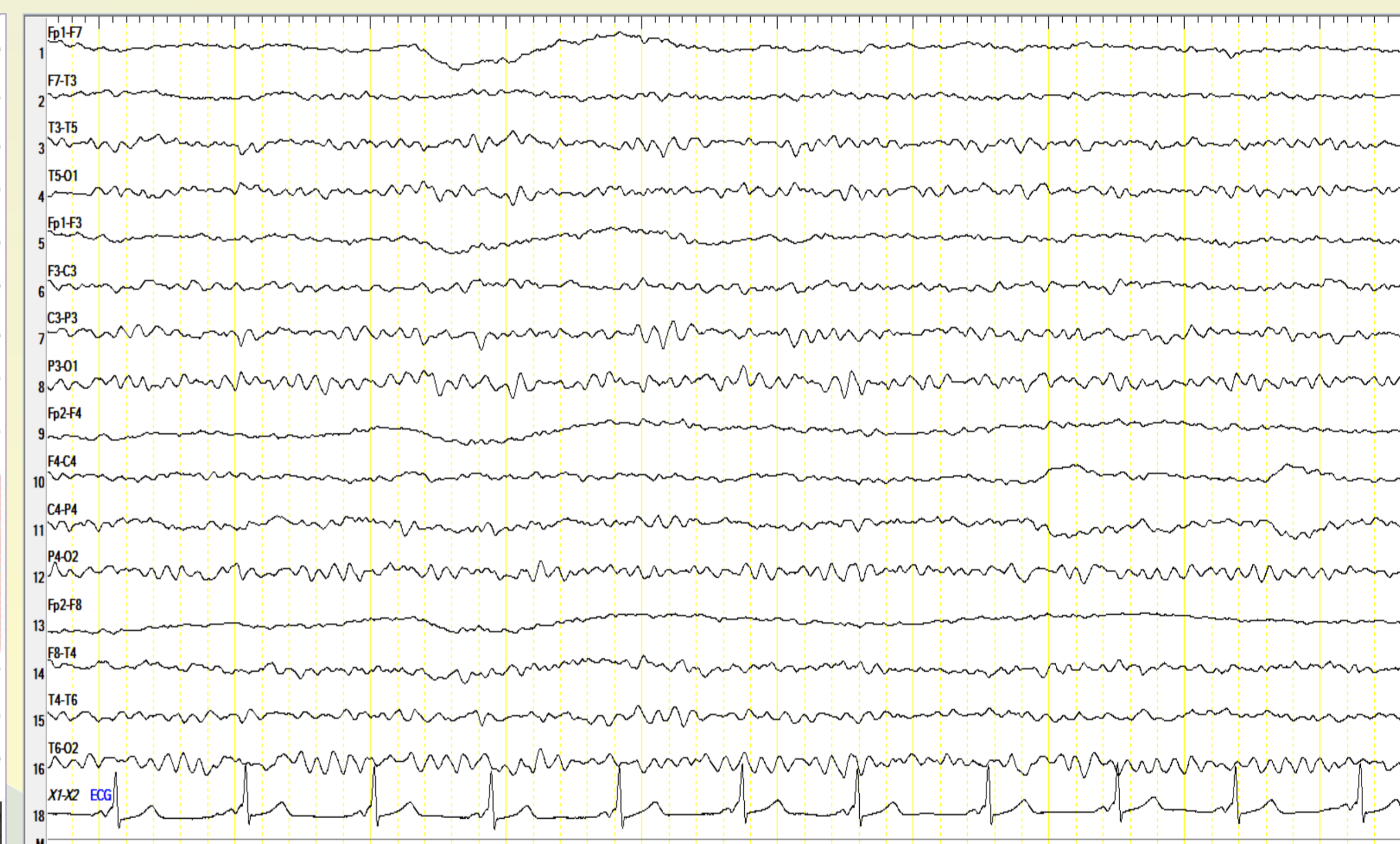
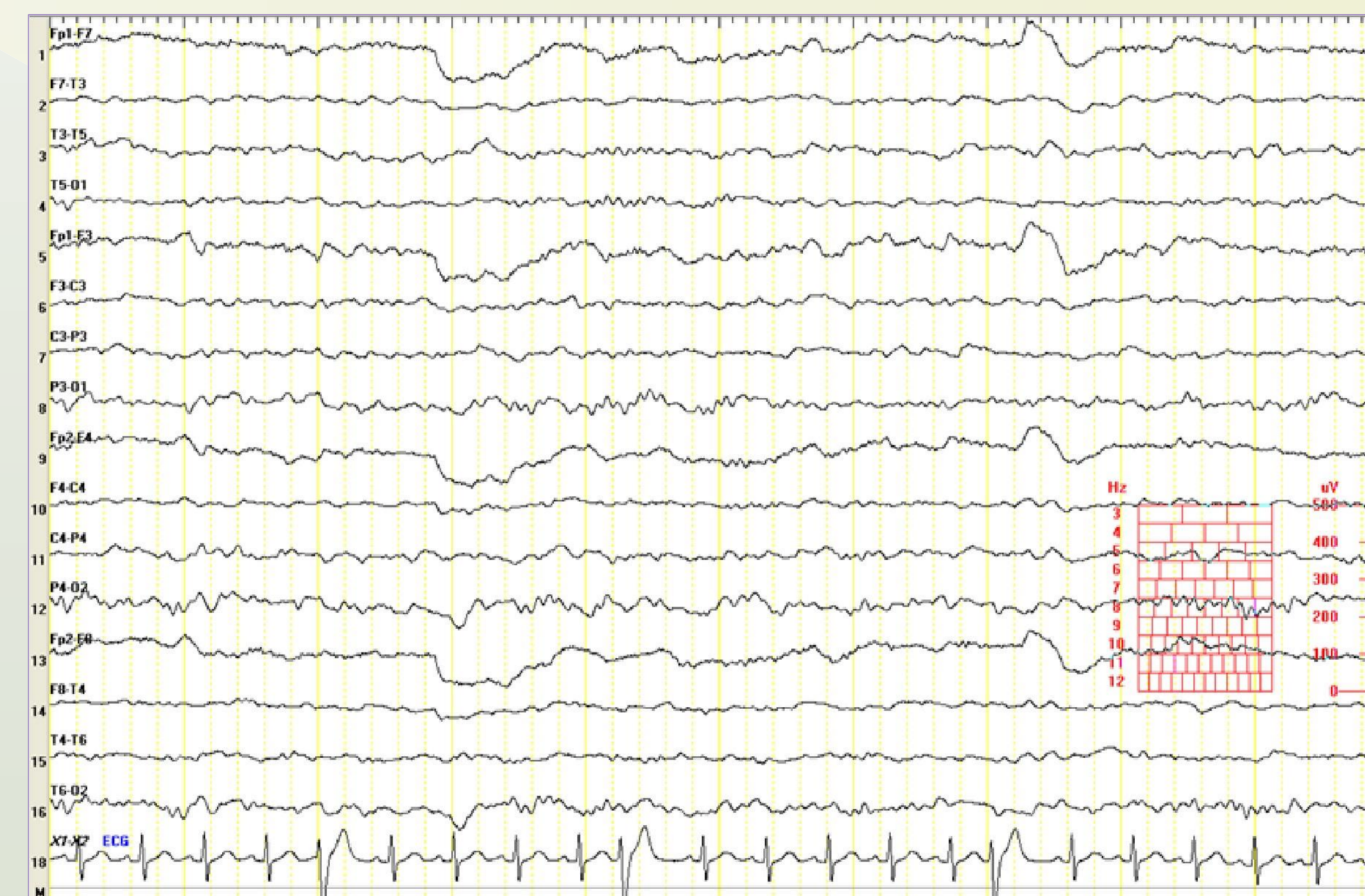


# Salient Cases Demonstrating Benefit of Consideration of Simultaneous ECG Recording Together With Routine Interictal EEG

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Differential diagnosis of seizures is one of the most important issues in clinical practice. There are many causes of seizures, varying from epileptic seizures to nonepileptic paroxysmal events, including cardiac arrhythmias. Moreover, epileptic patients may have cardiac arrhythmias. Simultaneous ECG recording is essential together with EEG recordings because it may prevent missed opportunities for patients in diagnostic evaluation of seizure etiology. However, it may have difficulties when patient is child or when EEG interpreter is not familiar with ECG manifestations of cardiac conduction abnormalities on EEG-ECG recordings. We present three cases with seizures and cardiac arrhythmias remained undiagnosed and therefore aim to exemplify there various associations between arrhythmias and epileptic or non-epileptic seizures.



**Case 1** is 8 y of age boy with Self-limited epilepsy with centrotemporal spikes based on clinical and EEG features. But his EEG-ECG recording showed cardiac arrhythmias in addition to epileptiform discharges. The patient denied cardiac symptoms. Holter recording showed isolated uniform 316 ventricular premature beats. The patient was put on LVT, with neither seizures nor cardiac symptoms in his follow-up.

**Case 2** is 10 y of age boy presented with cardiac arrhythmias. His Holter recording demonstrated isolated uniform 188 ventricular premature beats. Cardiac arrhythmias were not detected in the second Holter in the second year. He was followed with no cardiac or seizure symptoms for 3 years.

**Case 3** is 11 y of age girl referred with diagnosis of epilepsy and CBZ treatment due to convulsions. Her previous EEGs were normal. On admission, her EEG-ECG recording revealed cardiac conduction abnormality. Her Holter recording demonstrated isolated uniform 127 ventricular premature beats. She has been with no symptoms on atenolol after CBZ was stopped.

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- ✓ There are complex associations between interictal arrhythmias and seizures which may be epileptic or non-epileptic.
- ✓ Simultaneous ECG recordings together with routine interictal EEG give cost-effective opportunities to catch such associations.
- ✓ As those associations are complex, management of such cases are not uniform. And, cardiac arrhythmias do not mean necessarily antiarrhythmia therapies in all cases.

## References

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